



Newsletter

Volume 15, Number 4
July - August 1998

IES Display Garden Highlights ...

Perennial Garden ... After you read this issue of the *IES Newsletter* you'll want to explore two new attractions, the Xeriscape Bed and the Water Garden. And while you're here, take a look at the annual beds and ornamental grasses, which are at their best at this time of year.

Fern Glen ... Don't miss the fall splendor: elderberries, bog aster, white wood aster, zig zag goldenrod and the shade-loving wetland black-eyed Susan. And watch the progress of the "poor fen", part of an educational display that native plant gardener Judith Sullivan is developing for indigenous wetland plants.

Gifford House Visitor and Education Center ... Check the bulletin board for the current garden highlight, researched and written by Perennial Garden assistant Bill Relyea. Each week Mr. Relyea describes a different plant or bed from ecological, botanical, medicinal and mythological perspectives.

The *IES Newsletter* is published by the Institute of Ecosystem Studies, located at the Mary Flagler Cary Arboretum in Millbrook, New York.

Director: Gene E. Likens
Administrator: Joseph S. Warner
Head of Education: Alan R. Berkowitz
Newsletter editor: Jill Cadwallader

Address newsletter correspondence to the editor at:

Institute of Ecosystem Studies
Education Program, Box R
Millbrook NY 12545-0178

e-mail: cadwalladerj@ecostudies.org

Printing: Central Press, Millbrook, N.Y.

Perennial Pedagogy

A knack for creative thinking was clearly a quality shared by some of the early botanists —just consider the names they came up with for their discoveries: prairie smoke ... firecracker flower ... royal catchfly ... rattlesnake-master ... duckweed ... water lettuce ... horsetail. Now, for those of you who like to put faces with names, two new beds at the IES Perennial Garden are waiting to be explored.

These new beds demonstrate opposite extremes in gardening. One is a Xeriscape Bed, for displaying draught resistant plants, and the other is a Water Garden. But they share a common goal, with each other and with the other Perennial Garden beds, which is to educate IES visitors about ecological gardening and about plant diversity.

Southwest Meets Northeast

Before she joined the Institute staff as display gardener, Elizabeth Ashton studied xeriscaping in Colorado. What appealed to her was the naturalistic approach of xeriscape gardening, and the use of cacti, grasses and wildflowers. Several summers ago, when this region suffered a severe dry spell, Ms. Ashton recognized the potential of the IES Perennial Garden as a place to learn and teach about draught resistant species. She began accumulating plants and storing them in the lath house at the Greenhouse Complex, awaiting construction of the outdoor display area. In fall 1997, she and her co-workers hauled in the rocks for

structure and substrate, and laid a stone path that serves not only as a way for visitors to get as close as possible to the plants but also as a natural divider between the rock garden and the field components of the bed. Soil amendments were leaf compost for its nutrients, and sand and fine stone for improved drainage. The IES Xeriscape Bed is not watered, but mulch on the surface helps to retain existing moisture.

Ms. Ashton selected plants based on their degree of draught resistance. A number are native to North America, and many are non-hybridized; these have a natural ability to cope with local conditions, and therefore are more able to survive dry spells. Plants are arranged in a natural style, close together, supporting each other as they do in the wild. There are over 200 varieties in the 900+ square foot bed, including sedums, hens-and-chicks, asters, little bluestem and other grasses, and a number of *Penstemon*. Ms. Ashton hopes that the Xeriscape Bed will teach gardeners about water conservation and about what plant varieties are draught tolerant in this region, as well as about the concept of xeriscaping in general.

Wet and Wild

Late in the 1920s, behind their red brick home the Gifford family had a shade garden, a sunken garden, and a water garden. At some point the latter was filled

continued on page 2



Elizabeth Ashton labels plants in the new Xeriscape Bed.

Perennial Pedagogy, *continued*

in. Now, the garden behind what is now the IES Gifford House Visitor and Education Center has running water once again. At the site of the original water garden, a new one has been completed.

This change back to the original garden plan was something that Ms. Ashton had thought about for some time. "I've always wanted the sound and look of water in the Perennial Garden, a place for water plants as well as for frogs and other critters," she explains. Finally, late last summer, the round bed that had held some of the sun-loving perennial collection was excavated

And the "critters"? The submerged plants and subsurface roots provide habitat for aquatic animals, so the water garden will be an attractive home for a diversity of species. Easily visible already in the clear water are minnows and rapidly maturing tadpoles, as well as waterstriders and a water-boatman, two interesting aquatic insects. Later on, more species of fish will be added, and Ms. Ashton and Mr. Relyea are keeping their eyes open for natural introductions. They also are anticipating occasional visits by herons and other birds.

Now, the Pedagogy Part ...

"Our goal for the Perennial Garden is to create educational and research-oriented garden displays that are aesthetically pleasing in design and, with the inclusion of native and indigenous plants, environmentally sympathetic in technique," say Ms. Ashton and Mr. Bradley Roeller, IES manager of display gardens. The two new beds join other educational demon-

strations already in existence — the Deer Browse Demonstration Garden, the Leonard Shankman Rose Garden, the Butterfly and Hummingbird Beds, and the Poisonous Plant Bed. In addition, both will be used as outdoor classrooms for courses and workshops offered by the Institute's Continuing Education Program, and the Water Garden is already a favorite study site for the budding ecologists in the IES Summer Ecology Day Camp. ■



MOLLY AHEARN

In the Xeriscape Bed: whorled milkweed

The genus name (*Asclepias*) is from "Asklepios", the Greek god of medicine, while the species (*verticillata*) means whorled, indicating leaves that radiate from a single axis. This milkweed is one of the smallest of the milkweed family (which includes the common milkweed — *A. syriaca* — renowned for its key role in the life cycle of the monarch butterfly), with plants seldom reaching over two feet in height. It bears small umbels of white to greenish-white flowers, which ultimately produce the familiar milkweed pods. The leaves are narrower than those of other milkweeds, perhaps an evolutionary adaptation to life in an arid environment.

Elsewhere in the xeriscape bed is another milkweed, also labeled *A. verticillata*, with a much larger leaf. The two plants come from different parts of this country, and may be examples of 'geomorphic variation': grown in different environmental conditions, the same species may take on slightly different physical characteristics while maintaining the same essential flower form or other key botanical characteristics.



MOLLY AHEARN

Henry Behrens, left, and Bill Relyea put the finishing touches on the Water Garden

and lined to make a watertight pool. This spring, Mr. Henry Behrens, IES maintainer, assisted by Mr. Bill Relyea, Perennial Garden assistant, built a fieldstone wall around it. Along the inside they constructed a separate bog garden.

Plants in the IES water garden are representative of the major types found in freshwater bodies. There are the deep-water types, such as water lilies, with both hardy and tropical varieties. A second, very important type is the oxygenators, some of which tropical fish fanciers may recognize as similar to those growing in their home aquariums. Floating plants, such as water lettuce, water hyacinth and duckweed (one species of which is the world's smallest flowering plant), provide shade that helps control algae. And the last type is called the marginals, which include dwarf cattail, rush, horsetail (see box), pickerel weed and marsh marigold. The bog garden, filled with Sphagnum moss, shows off several carnivorous species — native pitcher plants and sundew — as well as bog rhododendron and bog rosemary. More plants of all types will be added as the garden matures.

In the Water Garden: horsetails

When these plants were evolving, they shared the Earth with dragonflies with a 27-inch wingspan, six-foot long millipedes and nine-foot long salamanders. It was the Carboniferous period, 345 to 280 million years ago, tens of millions of years before the evolution of dinosaurs. Horsetails — *Equisetum* species — grew in the swamp forests of this "Age of Amphibians" with tree ferns and club mosses. The remains of these plants form today's coal deposits.

Horsetails have changed little over the past 300 million years or so. They look primitive, with hollow, jointed stems topped with fleshy pale cones that contain reproductive spores. Because the stems have such a high silicon content, horsetails are often called scouring rush; dried stems were used by Native Americans to scour cooking pots and by early American carpenters and other craftsmen to polish wood, ivory and metal.

IES Wins Prestigious Kresge Support

Late in June, just before leaving for two months of research at the Hubbard Brook Experimental Forest in New Hampshire, Institute Director Dr. Gene E. Likens announced that IES has received a \$300,000 challenge grant from The Kresge Foundation. "This award comes at a most propitious time," said Dr. Likens, who expects that such a strong show of support from one of America's most prestigious foundations will spur additional foundations, corporations and individuals to invest in the Institute.

The grant is in support of the Campaign for the Institute of Ecosystem Studies, a \$6 million effort that will reinforce the Institute's programs through establishment of an endowed chair for a senior ecologist and construction of a new environmental research building. The campaign was publicly announced in fall

1997 by Ms. Gretchen Long Glickman, Chairman of the IES Board of Trustees (*IES Newsletter*, Vol. 14 No. 6).

The Kresge Foundation gives challenge grants toward projects involving construction or renovation of facilities and the purchase of major capital equipment or real estate. The IES environmental research building, which will extend the Institute's scientific capabilities by providing space for scientists and advanced laboratory technology, meets the Foundation's criteria.

A requirement of The Kresge Foundation is that the applicant raise initial funds before submitting a proposal. Then, once the challenge grant has been awarded, the applicant must raise the remainder before Kresge funds are released. Noting that the campaign already has achieved

approximately 80% of its goal, Dr. Likens said that the Institute must have the final \$950,000 in hand by October 1999 to meet The Kresge Foundation challenge.

Ms. Jan Mittan, IES Development Officer, gives a great deal of credit for the award to the many individuals, companies and foundations that support the Institute's research and education programs. According to Ms. Mittan, generous support for the Campaign for the Institute of Ecosystem Studies has come from corporations, foundations and individuals throughout the Hudson Valley, as well as from many with broader, national interests. "We are proud that The Kresge Foundation has chosen to partner with the Institute and our benefactors in reaching our campaign goal," said Ms. Mittan. ■

With a Science Degree I Can ...

Each summer since 1988 the Institute has provided opportunities for undergraduate students to do independent ecological research, through the Research Experiences for Undergraduates (REU) program. This year 14 students were accepted into the program and are collaborating with IES scientists at the Institute, at the Hubbard Brook Experimental Forest, and in Baltimore, with the Baltimore Ecosystem Study. On July 12, these students joined students from other REU programs as well as from local colleges and universities for a "Forum on Opportunities in Ecology".

Speaking at the morning forum and answering students' questions during afternoon discussion groups were professionals representing 12 different ecology/environment careers. Less formal situations provided additional opportunity for students to learn about how careers in science can evolve. *At right:* During the mid-morning break, Laura Zeisel, Esq., an environmental lawyer from New Paltz, N.Y. (who at one time had considered a career in marine biology), spoke with Mark Maglienti, an AmeriCorps Volunteer working with IES educator Martha Cheo in the Institute's "Building Watershed Bridges" watershed education program, and Antonia R. Giardina, an IES REU student from Colgate University.

Ms. Giardina is doing her three months of research on the role of song birds in the ecology of Lyme disease. Each day she

begins her field work at 6 a.m., using mist nets to capture wood thrush, veeries, robins and ovenbirds and releasing the birds after checking them for black-legged ticks. She says she is finding a fair number, primarily nymphs. She and the other IES REU students will present their final results at a public symposium on August 18.

When asked about the effectiveness of the day's forum, Ms. Giardina replied that it had given her a broader perspective of what kinds of jobs await ecology gradu-

ates. "I've always been on a research track," she said, "so I was especially interested in learning about jobs such as Nathan Frohling's (Director of the Tideland Program at The Nature Conservancy in Middletown, Conn.), where scientists work closely with people as well as with the natural environment."

Funding for the IES Research Experiences for Undergraduates program comes from the National Science Foundation and the Andrew W. Mellon Foundation. ■



INSTITUTE OF
ECOSYSTEM STUDIES
Education Program
Box R
Millbrook, New York 12545-0178



Newsletter

Volume 15, Number 4
July - August 1998

Nonprofit Org.
US Postage
PAID
Millbrook, NY
Permit No. 16



Calendar

CONTINUING EDUCATION

The fall semester begins in mid-September. One of the first programs is the **Pond Management and Restoration Workshop**, on Saturday, September 19. For information on this program, or to request a catalogue listing all fall courses, workshops and excursions, call the Continuing Education Program office at 914/677-9643.

IES SEMINARS

Free scientific seminars are held each Friday from mid-September through early May. For a complete schedule of fall programs, contact the seminar coordinator at 914/677-5343 after mid-August.

Sept. 11: **The Effect of Multiple-Anthropogenic Environmental Changes on Carbon Gain in an Urban Ecosystem**. Ms. Jillian W. Gregg, Cornell Univ. and IES

Sept. 18: **Historic Forest Use in Central Europe and Its Implications to Forest Ecosystem Status**. Dr. Gerhard Glatzel, Universität für Bodenkultur, Vienna, Austria

Sept. 25: **To be announced**. Speaker: Dr. David C. Coleman, Institute of Ecology, University of Georgia

Oct. 2: **To be announced**. Speaker: Dr. Bruce T. Milne, Sevilla LTER, University of New Mexico

Oct. 9: **Nutrient Changes in the Mississippi River and System Responses on the Adjunct Continental Shelf**. Dr. Nancy N. Rabalais, Louisiana Universities Marine Consortium

Oct. 16: **To be announced**. Speaker: Dr. Susan Bell, University of South Florida

Oct. 23: **To be announced**. Speaker: Dr. Christopher S. Potter, NASA-Ames Research Center, Calif.

Oct. 30: **To be announced**.

SUNDAY ECOLOGY PROGRAMS

Free public programs are offered on occasional Sundays. Call 914/677-5359 to confirm the day's topic or, in case of poor weather, to learn the status of the day's program.

October 18: **The Mary Flagler Cary Arboretum and the Institute of Ecosystem Studies: Past and Present**, presented by Mr. Joseph Warner and Ms. Jill Cadwallader. This is a joint program with the Town of Washington/Village of Millbrook Historical Society. It begins at 1 p.m. at the IES Auditorium on Route 44A.

VOLUNTEER OPPORTUNITIES

For information on opportunities and benefits, call Ms. Su Marcy at 914/677-7641.

HOURS

Summer hours: April - September
Closed on public holidays.

Public attractions are open Mon. - Sat., 9 a.m. - 6 p.m. & Sun. 1-6 p.m., with a free permit*.

(Note: The Greenhouse closes at 3:30 p.m.)
The IES Ecology Shop is open Mon.-Fri., 11 a.m. - 5 p.m., Sat. 9 a.m. - 5 p.m. & Sun. 1-5 p.m. (The shop is closed weekdays from 1-1:30 p.m.)

* Free permits are required for visitors and are available at the IES Ecology Shop or the Education Program office daily until 5 p.m.

IES ECOLOGY SHOP

New in the Shop ... IES T-shirts in great new colors ... miniature mulberry-paper picture frames ... for children ... birds-in-a-nest puppets ... woodland and bug sticker books ... and in the Plant Room ... mud gloves ... gardening/shade hats

Senior Citizens Days: 10% off every Wed.

•• Gift Certificates are available ••

GREENHOUSE

The IES greenhouse, a year-round tropical plant paradise and a site for controlled environmental research, is open until 3:30 p.m. daily except public holidays. Admission is by free permit (see HOURS).

MEMBERSHIP

Join the Institute of Ecosystem Studies. Benefits include subscription to the newsletter, member's rate for courses and excursions, a 10% discount on IES Ecology Shop purchases, and participation in a reciprocal admissions program. Individual membership: \$30; family membership: \$40. Call Ms. Janice Claiborne at 677-5343.

The Institute's Aldo Leopold Society
In addition to receiving the benefits listed above, members of The Aldo Leopold Society are invited guests at special events including spring and fall IES science updates. Call Ms. Jan Mittan at 677-5343.

TO CONTACT IES...

... for research, graduate opportunities, library and administration:

Institute of Ecosystem Studies
Box AB

Millbrook NY 12545-0129

Tel: 914/677-5343 • Fax: 914/677-5976
Street address: Plant Science Building,
Route 44A, Millbrook, N.Y.

... for education, general information and the IES Ecology Shop:

Institute of Ecosystem Studies
Education Program, Box R
Millbrook NY 12545-0178

Tel: 914/677-5359 • Fax: 914/677-6455
IES Ecology Shop telephone: 914/677-7649
Street address: Gifford House Visitor and
Education Center, Route 44A, Millbrook, N.Y.

... IES website: www.ecostudies.org

FALL PLANT SALE

Saturday, Sept. 26: 10 a.m. - 4 p.m. and Sunday, Sept. 27: 11 a.m. - 4 p.m.
Gifford House Parking Lot, Route 44A • Call 914/677-5365 for information.